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|---|---|
| TANG, KENNETH | |
| **ART UNIT** | **PAPER NUMBER** |
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Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 09/329,456 | Applicant(s) CARLSON ET AL. | |
|---|---|---|---|
| | Examiner Kenneth Tang | Art Unit 2127 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *18 November 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

1. Applicant's arguments filed 11-18-02 have been fully considered but they are not persuasive.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1, 2, 11, 14, 15, 24, 27, and 28 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Referring to claims 1, 2, 11, 14, 15, 24, 27, and 28, "status information" needs to be defined in the specification because it is not explicitly understood what status-type of information it constitutes of.

3. Claims 4 and 17 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Referring to claims 4 and 17, "first class" needs to be defined in the specification because it is not explicitly understood what this terminology means with respects to the "single thread."

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 2, 11, 14, 15, 24, 27, and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Referring to claims 1, 2, 11, 14, 15, 24, 27, and 28, the term "status information" is indefinite. For example, the 2nd step determination is made to determine whether a thread is active (based on status information). Then in the last step (lines 12-15), we disregard that determination and initiate cleanup anyway. These steps (1-2) are not related to the method of the invention.

5. Claims 4 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Referring to claims 4 and 17, the term "first class" is indefinite. It is unclear whether class refers to type of thread or importance of a thread.

6. Claims 12 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Referring to claims 12 and 25, it is not explicitly clear how the "event" can be "a period of time." It is believed that the applicant may mean the "event occurs in a period of time." Clarification is needed.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

*While claims were rejected under 35 USC 112, 1st paragraph, in order to advance prosecution, claims will be treated on the merits in view of the examiner's best understanding of the disclosure and the prior art.*

7. Claim 1-3, 6, 11, 13-16, 19, 24, and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeager (US 6,418,542).

Referring to claim 1, 11, 14, 24, 27, and 28, Yeager discloses a data processing system for monitoring a plurality of related threads with the following steps:

- polling the plurality or related threads for status information ("polling thread" for "input events", col 2, lines 54-59 and "plurality of threads", col 3 lines 35-41);
- determining whether a thread within a plurality of related threads is **inactive** as a response to receiving status information ("multi-threaded process" contains "information on each thread in the plurality of threads", col 3, lines 37-39, and "active", "threads", "critical signal" determines if active, col 3, lines 16-22); Determining if a thread is active is exactly the same as determining if a thread is not inactive.
- initiating cleanup processes for the thread based on the status information after a determination is made that a thread within the plurality of threads is inactive ("cleaning up a particular thread's resources", "critical signal handler" decides when to clean based on its access to the "data in shared memory", col 8, lines 38-46, see Figure 2).

Yeager fails to explicitly teach:

- performing the cleanup process in response to an absence of a determination that a thread within the plurality of related threads is inactive

However, Yeager does disclose that an "active thread" causes a "critical signal" (204) for the cleanup (columns 6-7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to clean up errors whenever they occur, or more specifically, perform a "cleanup" when the system determines that the threads are not active. This would increase the efficiency because in the instance of being active, the unnecessary resource could be used by other threads.

Referring to claim 2 and 15, Yeager teaches having information stored in a shared memory 116 after it is read or received (col 5, lines 27-32).

Referring to claims 3 and 16, Yeager fails to explicitly teach polling, determining, and the initiating steps to be performed all in a single thread. However, it would have been obvious to include this feature in a single thread because it would make the whole overall process faster if the polling, determining, and initiating steps were done all together at the same time, rather than performing each one individually one step at a time.

Referring to claims 6 and 19, it is obvious to reset resources allocated to an identified inactive thread such that the resources are reallocatable because this will allow the information to be deleted.

Referring to claims 13 and 26, Yeager discloses an event that is an error ("illegal memory access error", col 4, lines 37-42).

8. Claims 9, 10, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeager (US 6,418,542) in view of Win (US 6,182,142).

Referring to claims 9, 10, 22, and 23, Yeager fails to explicitly teach implementing this system with a **virtual machine** or **Java virtual machine**. Win teaches using a "**Java Virtual Machine**" (col 25, lines 50-51). It would have been obvious to one of ordinary skill in the art at

the time the invention was made to include a virtual machine or Java virtual machine to the existing system of Yeager for the reason of utilizing system independence; a Java application will run the same in any Java VM, regardless of the hardware and software underlying the system.

Referring to claims 12 and 25, the reference of Win discloses an event, which is an occurrence of a period of time *("within a pre-determined period of time", col 10, lines 39-45).*

9. Claims 5 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeager (US 6,418,542) in view of Nation (US 6,233,599).

Referring to claims 5 and 18, Yeager fails to explicitly teach having the initiating step identify active threads and inactive threads within the plurality of related threads. However, Nation discloses a "thread identifer" that can identify if a thread is active or inactive (Figure 9, 974, and col 22, lines 23-36). Yeager also fails to explicitly teach terminating the inactive threads. However, it would be obvious to delete inactive threads as a "clean up" mechanism for the system. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the features of Nation to the existing system of Yeager for the reason of being able to identify if the threads are active or inactive so that the system will know when to carry out the cleanup process.

10. Claims 7 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeager (US 6,418,542) in view of Anschuetz (US 5,305,455).

Referring to claims 7 and 20, Yeager fails to explicitly teach having the plurality of threads be **printer threads**. Anschuetz discloses a data processing system, which uses "**a thread to control a printer**" (col 3, lines 42-45). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use printer threads for the threads in the existing system of Yeager so that it can have a means for outputting information on a printer.

11. Claims 8 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeager (US 6,418,542) in view of Yee (US 5,471,576).

Referring to claims 8 and 21, Yeager fails to explicitly teach having the plurality of threads be video threads. Yee discloses a data processing system, which uses "video threads in the application program" (col 4, lines 44-49). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use video threads for the threads in the existing system of Yeager so that it can have a means for outputting information onto video.

12. Claims 4 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeager (US 6,418,542) in view of Cejtin (US 5,745,703).

Referring to claims 4 and 17, Yeager fails to explicitly teach having the single thread as part of a class. However, Cejtin discloses "threads" as a object-type of a class called "first-class objects" (col 12, lines 59-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include this feature of Cejtin to the existing system of Yeager for the reason of improving the data processing system by having a higher-order abstraction for building remote references or address spaces (higher-order abstraction, remote references, address spaces, col 1, lines 59-67, and col 2, lines 1-3).

**ARGUMENTS**

35 U.S.C. 112 Rejections

13. Examiner has reconsidered and has removed all 35 U.S.C. 112 rejections.

35 U.S.C. 103 Rejections

14. Applicant argues that Yeager fails to teach the problem of determining whether a thread within a multi-threaded process is inactive, and if so, cleaning up that inactive thread's resources to enable a more efficient use of the system's resources. In response, Examiner respectfully disagrees. Yeager discloses "cleaning up a particular thread's resources" within a multi-thread process (col 8, lines 38-46, see Figure 2, see Abstract), making it more efficient, which will in turn prevent system crashes.

15. Applicant argues that Yeager does not teach or suggest polling a thread for status information. In response, Examiner respectfully disagrees. Yeager discloses a polling thread within the multi-threaded process ("polling thread" for "input events", col 2, lines 54-59 and "plurality of threads", col 3 lines 35-41). The polling is discontinued when the input events are directed to the offending thread, or thread that needs to be "cleaned." It is well known that an event can be defined to respond to a particular scenerio, state or status.

16. Applicant argues that Yeager fails to teach or suggest determining whether a thread is inactive in response to receiving status information. In response, it is inherent in Yeager that information on status of the thread is used and needed to determine whether or not the thread is active.

17. Applicant argues that Yeager does not teach basing the cleanup process on the status information. However, Yeager does disclose that an "active thread" causes a "critical signal" (204) for the cleanup (columns 6-7).

18. Applicant argues that Examiner may not merely state that the modification would have been obvious to one of ordinary skill in the art without pointing out in the prior art a suggestion of the desirability of the proposed modification. However, the "suggestion to modify the art to produce the claimed invention need not be expressly stated in one or all the references used to show obviousness." Cable elec. Prods., Inc. v. Genmark Inc., 770 F. 2d 1015, 1025, 226 USPQ 881, 886 (Fed. Cir. 1985). Rather the test is whether all the teachings of the prior art, taken as a

whole, would have rendered the claimed invention obvious to one of ordinary skill in the art. See In re Gorman, 933 F.2d 982, 986, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991).

19. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

***Conclusion***

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth Tang whose telephone number is (703) 305-5334. The examiner can normally be reached on 8:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alvin Oberley can be reached on (703)305-9716. The fax phone numbers for the organization where this application or proceeding is assigned are none for regular communications and none for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is none.

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January 23, 2003